

What is claimed is:

[Claim 1] 1. A method for identifying the track capacity of a track of an optical disk in an optical disk drive, the method comprising:

- (a) checking if any track of a session having a target track has link blocks;
- (b) determining the write mode of the target track; and
- (c) calculating track capacity of the target track according to its write mode.

[Claim 2] 2. The method of claim 1 further comprising utilizing the optical disk drive to access the program memory area (PMA) of the optical disk and the table of contents (TOC) of the session having the target track, wherein step (c) further comprises setting actual capacity of the target track as the size of the target track excluding its pre-gap in the case that either the TOC exists but the PMA does not or the TOC and PMA exist but the track information of the session is not recorded in the PMA.

[Claim 3] 3. The method of claim 2, wherein the write mode of the target track is disc-at-once (DAO), session-at-once (SAO), or RAW.

[Claim 4] 4. The method of claim 1 further comprising utilizing the optical disk drive to access the program memory area (PMA) of the optical disk and the table of contents (TOC) of a session having the target track, wherein step (b) further comprises determining whether the write mode of the target track is a packet-write mode according to contents of the PMA in the case that the TOC does not exist but the PMA exists and the track information of the session is recorded in the PMA.

[Claim 5] 5. The method of claim 4, wherein step (c) further comprises setting actual capacity of the target track as the size of the target track

excluding its pre-gap and last two link blocks when the write mode of the target track is not a packet-write mode.

[Claim 6] 6. The method of claim 4, further comprising accessing the track descriptor block (TDB) of the target track to determine whether the write mode of the target track is a fixed packet write (FPKT) or variable packet write (VPKT) when its write mode is a packet-write mode.

[Claim 7] 7. The method of claim 6, wherein step (c) further comprises setting actual capacity of the target track as the size of the target track excluding its pre-gap and last two link blocks when the write mode of the target track is VPKT.

[Claim 8] 8. The method of claim 6, wherein step (c) further comprises setting actual capacity of the target track as the size of the target track excluding its pre-gap and all link blocks when the write mode of the target track is FPKT.

[Claim 9] 9. The method of claim 1 further comprising utilizing the optical disk drive to access the program memory area (PMA) of the optical disk and the table of contents (TOC) of a session having the target track, and determining if any track of the session exists in a packet-write mode, wherein step (c) further comprises determining whether the write mode of the target track is a fixed packet write (FPKT) or variable packet write (VPKT) by accessing the track descriptor block (TDB) of the target track when the TOC and PMA exist, the track information of the session is recorded in the PMA, and the session has a track in packet-write mode.

[Claim 10] 10. The method of claim 9, wherein step (c) further comprises setting actual capacity of the target track as the size of the target track

excluding its pre-gap and last two link blocks when the write mode of the target track is VPKT.

[Claim 11] 11. The method of claim 9, wherein step (c) further comprises setting actual capacity of the target track as the size of the target track excluding its pre-gap and all link blocks when the write mode of the target track is FPKT.

[Claim 12] 12. The method of claim 1, further comprising utilizing the optical disk drive to access the program memory area (PMA) of the optical disk and the table of contents (TOC) of a session having the target track, and determining if any track in the session exists in a packet-write mode, wherein step (c) further comprises setting the actual capacity of the target track as the target track excluding its pre-gap and last two link blocks when the TOC and PMA exist and the track information of the session is recorded in the PMA, the session has no track in packet-write mode, and in step (a) the track of the session has link blocks.

[Claim 13] 13. The method of claim 1, further comprising utilizing the optical disk drive to access the program memory area (PMA) of the optical disk and the table of contents (TOC) of a session having the target track, and determining if any track in the session exists in a packet-write mode, wherein step (c) further comprises setting the actual capacity of the target track as the size of the target track excluding its pre-gap when the TOC and PMA exist and the track information of the session is recorded in the PMA, the session has no track in packet-write mode, and in step (a) no track of the session has link blocks.

[Claim 14] 14. The method of claim 1, wherein the optical disk drive is a read-only optical disk drive or a recordable optical disk drive.

[Claim 15] 15. An optical disk drive for utilizing the method of claim 1 to identify track capacity of a track of an optical disk.

[Claim 16] 16. A method for determining the write mode of a track of an optical disk in an optical disk drive, the method comprising:

- (a) utilizing the optical disk drive to determine if any track of a session having a target track has link blocks; and
- (b) determining the write mode of the target track accordingly.

[Claim 17] 17. The method of claim 16, further comprising utilizing the optical disk drive to access the program memory area (PMA) of the optical disk and the table of contents (TOC) of a session having the target track, wherein if either the TOC exists but the PMA does not or the TOC and PMA exist but the track information of the session is not recorded in the PMA, the write mode of the target track is disc-at-once (DAO), session-at-one (SAO), or RAW.

[Claim 18] 18. The method of claim 16, further comprising utilizing the optical disk drive to access the program memory area (PMA) of the optical disk and the table of contents (TOC) of a session having the target track, wherein if the TOC does not exist but the PMA exists and the track information of the session is recorded in the PMA, the write mode of the target track is packet-write mode or track-at-once (TAO).

[Claim 19] 19. The method of claim 18, further comprising determining whether the write mode of the target track is a packet-write mode according to the contents of the PMA.

[Claim 20] 20. The method of claim 18, wherein step (b) further comprises accessing the track descriptor block (TDB) of the target track to

determine whether the write mode of the target track is fixed packet write (FPKT) or variable packet write (VPKT) when the write mode is a packet-write mode.

[Claim 21] 21. The method of claim 16, further comprising utilizing the optical disk drive to access the program memory area (PMA) of the optical disk and the table of contents (TOC) of a session having the target track, and to determine if any track of packet-write mode exists in the session, wherein step (b) further comprises determining the write mode of the target track is fixed packet write (FPKT) or variable packet write (VPKT) by accessing the track descriptor block (TDB) of the target track when the TOC and the PMA exist with recording the track information of the session and the session having a track of packet-write mode.

[Claim 22] 22. The method of claim 16, further comprising utilizing the optical disk drive to access the program memory area (PMA) of the optical disk and the table of contents (TOC) of a session having the target track, and to determine if any track of packet-write mode exists in the session, wherein if the TOC and PMA exist with recording the track information of the target track, no track of packet-write mode exists in the session, and no track of the session has link blocks in step (a), the write mode of the target track is data-at-one (DAO), session-at-once (SAO), or RAW.

[Claim 23] 23. The method of claim 16, further comprising utilizing the optical disk drive to access the program memory area (PMA) of the optical disk and the table of contents (TOC) of a session having the target track, and to determine if any track of packet-write mode exists in the session, wherein if the TOC and PMA exist with recording the track information of the target track, no track of packet-write mode exists in the session, and a track of the session has link blocks in step (a), the write mode of the target track is track-at-one (TAO).

[Claim 24] 24. The method of claim 16, wherein the optical disk drive is a read-only optical disk drive or a recordable optical disk drive.

[Claim 25] 25. An optical disk drive for utilizing the method of claim 16 to determine the write mode of a track of an optical disk.

[Claim 26] 26. A method for identifying track capacity of a track of an optical disk in an optical disk drive, the method comprising:

(a) setting actual capacity of a target track as the size of the target track excluding its pre-gap when the write mode of the target track is a first type; and

(b) setting actual capacity of the target track as the size of the target track excluding its pre-gap and at least a part of link blocks when the write mode of the target track is a second type;

wherein the target track comprises a plurality of link blocks when its write mode is the second type.

[Claim 27] 27. The method of claim 26, wherein the first type of write mode is disc-at-once (DAO), session-at-once (SAO), or RAW.

[Claim 28] 28. The method of claim 26, wherein the second type of write mode is track-at-once (TAO), fixed packet write (FPKT), or variable packet write (VPKT).

[Claim 29] 29. The method of claim 28, further comprising setting actual capacity of the target track as the size of the target track excluding its pre-gap and last two link blocks when the write mode of the target track is TAO.

[Claim 30] 30. The method of claim 28, further comprising setting actual capacity of the target track as the size of the target track excluding its pre-gap and last two link blocks when the write mode of the target track is VPKT.

[Claim 31] 31. The method of claim 28, further comprising setting actual capacity of the target track as the size of the target track excluding its pre-gap and all link blocks when the write mode of the target track is FPKT.

[Claim 32] 32. The method of claim 26, wherein the optical disk drive is a read-only optical disk drive or a recordable optical disk drive.

[Claim 33] 33. An optical disk drive for utilizing the method of claim 26 to identify track capacity of a track of an optical disk.